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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/598,147	08/18/2006	Myung Ahn Ok	20345/0205330-US0	1621
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EXAMINER CHOI, LING SIU				
ART UNIT		PAPER NUMBER		
1796				
MAIL DATE		DELIVERY MODE		
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/598,147

Applicant(s)

OK ET AL.

Examiner

Ling-Siu Choi

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This Office Action is in response to the Amendment filed 08/25/2008. Claim 11 has been added and claims 1-12 are now pending, which are drawn to a method to prepare an ethylene polymerization catalyst. This Office Action is made as a Second Non-Final Rejection due to the rejections being based on the new ground with the same prior art references.

Claim Rejections - 35 USC § 112

2. **The following is a quotation of the second paragraph of 35 U.S.C. 112:**

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 7-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7, line 2-4, The recitation "X is a halogen element belonging to Group VII in the periodic table, or an alkoxy radical selected from the group consisting of OC_2H_5 , OC_3H_7 , OC_4H_9 " while X is defined as "a halogen element belonging to Group VII in the periodic table" on lines 3-4 of claim 6.

Claim 8, lines 5-6, the recitation "m, which are the same or different, respectively are an integer of 1 Or 2" while mid defined as "an integer ranging from 0 to 3" on lines 3-4 of claim 6.

Claim Analysis

4. Summary of Claim 1:

A method of preparing an ethylene polymerization catalyst , comprising:		
A	a1	reacting <u>magnesium halide</u> with alcohol in a hydrocarbon solvent
	a2	reacting the resulting product solution with <u>dialkylmagnesium</u>
	a3	reacting the resulting product from the step (a2) with alkyl halide or silane halide, to give a magnesium complex
B	reacting the magnesium complex with a titanium compound, to give a magnesium-titanium complex	
C	reacting the magnesium-titanium complex with an electron donor	

Claim Rejection - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kashiwa et al. (US 4,071,674) in view of Kioka et al. (US 4,330,649).

Kashiwa et al. disclose a process to prepare a catalyst for olefin polymerization, the process comprising the contact of (A) a transition metal catalyst component prepared by reacting (1) **a titanium compound** selected from TiX_4 and $Ti(OR)_{4-n}X_n$ [n = zero or a positive number of less than 4] with (2) the product formed by a reaction between (a) a magnesium dihalide solid carrier comprising an adduct formed by reacting a magnesium dihalide with an **aliphatic or aromatic C_{1-12} alcohol** in an inert **organic medium** and (b) an organometallic compound of the formula **$R_2Mg [R_2, MgX]$ with $I = 0$** with (B) an organometallic compound catalyst component selected from $R'_{3-m}AlX_m$, $R'_{3-n}Al(OR)_n$, and $RAI(OR)X$ [col. 4, lines 43-46; Example 1- hexane (col. 8, line 14); claim 1].

The differences between the present claims and the disclosure of Kashiwa et al. are the requirement of (A) a halogenating step and (B) a contacting step with the titanium compound and an electron donor.

Kioka et al. disclose a process to prepare a catalyst, comprising (A) a solid titanium catalyst component derived from a magnesium compound having no reducing ability in the liquid state, a halogen-containing titanium compound in the liquid state, and an electron donor and (B) an organometallic compound of a metal (claim 1). Kioka et al. further disclose that the magnesium compound having no reducing ability is obtained "by dissolving or suspending a magnesium compound containing alkyl, alkoxy, aryloxy,etc. in a hydrocarbon solvent..... and converting it into a halogen-containing

magnesium compound having no reducing ability while halogenating it with a halogenating agent such as a hydrogen halide, a silicon halide and halogen" (col. 6, lines 47-56). Kioko et al. furthermore disclose that "[t]he use of the magnesium having no reducing ability (a) is essential in the present invention, but this does not preclude the use of a magnesium compound having reducing ability in combination. In many cases, it is not desirable to use a large amount of the compound having reducing ability together" for "the titanium catalyst component having superior properties" (col. 3, lines 54-56; col. 7, lines 9-14). It is noted that the use of an electron donor can improve the stereospecificity of the resulting polymer. In light of such benefit, It would have been obvious to one of ordinary skill in the art at the time the invention was made to halogenate the contact product of magnesium dihalide, alcohol, and dialkylmagnesium and contact with a combination of titanium compound and the electron donor in the disclosure of Kashiwa et al. and thereby obtain the present invention.

Response to Arguments

7. Applicant's arguments filed 08/25/2008 have been fully considered but they are not persuasive.

"Step (c) of Applicants' invention as claimed in independent claim 1.....This can be seen, for example, from the comparison of Examples 1 and 2 to Comparative Examples 1 and 2 in Applicants' Tables 2 and 6, respectively. The amount of hexane-extracted component is drastically differentiated according to whether an electron donor

is used or not. In the process disclosed by Kashiwa, there are no comparable electron donor groups or organic ester groups that could provide donor electrons as provided for by Applicants' claimed process. "

It is well known that the addition of an electron donor usually leads to a polymer having a high tacticity, which results in reducing the amount of hexane-extracted component. Thus, such data does not provide an "unexpected result" which obviates the *prima facie* case of obviousness. Furthermore, Applicants do not provide an "unexpected result" or address the step of halogenation.

"Kioka teaches reacting a magnesium compound with a titanium compound already containing halogen. This is opposite to Applicants' approach. Kioka recognizes that "the solid titanium catalyst component varies greatly in properties depending upon the method of its preparation."

Attention is drawn to claim 1, wherein the "titanium compound" is not defined to contain a halogen.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/Ling-Siu Choi/

Primary Examiner, Art Unit 1796

December 7, 2008